

Chapter 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

The National Environmental Policy Act or NEPA (42 U.S.C. 4321, as amended) and the Council on Environmental Quality Regulations (40 CFR 1500-1508) mandate federal agencies to present and analyze alternatives to their proposed actions. The National Park Service's NEPA guidance document (DO-12 Handbook) reinforces this mandate, directing the NPS to examine a full range of alternatives in both an Environmental Impact Statement (EIS) or Environmental Assessment (EA). Accordingly, this EA develops and analyzes three alternatives for the proposed new Fire Management Plan (FMP) for Sleeping Bear Dunes National Lakeshore.

Approved resource and fire management plans authorize prescribed fires that contribute specifically to a park's resource management objectives. Wildland fires are managed with the appropriate management response as directed by the park's FMP and analysis of the specific situation. These fires can be managed entirely or in any part for resource benefits or be suppressed to minimize burned area due to threats to life or property, high values to be protected, or other social, political, and economic considerations that outweigh potential environmental benefits. Fire management personnel implement a decision-making process that evaluates and compares alternative management strategies with respect to safety, environmental, social, economic, political, and resource management objectives.

An approved FMP is required before a wildland fire management program can be fully implemented. The use of either prescribed fire or wildland fire or both for resource benefits is expressly not permissible without an approved FMP. The Superintendent approves the FMP and implementation plans for all fire use activities.

In the present context, the proposed action is a new Fire Management Plan that will update and replace the FMP, which was drafted in 1989 but never approved as a result of an extensive internal review of wildland fire policies and procedures at the NPS following the fires in Yellowstone National Park in the summer of 1988. Director's Order #18 (DO-18), Wildland Fire Management, which took effect in 1998, requires each park with vegetation capable of sustaining fire to develop a wildland fire management plan that will meet the specific resource management objectives for that park and to ensure that firefighter and public safety are not compromised.

The three alternatives discussed below represent different approaches to managing wildland and prescribed fires in Sleeping Bear Dunes National Lakeshore.

2.1 ALTERNATIVE 1 – NO ACTION (SUPPRESS ALL WILDLAND FIRES AND EXCLUDE PRESCRIBED FIRE)

Sleeping Bear Dunes National Lakeshore has a draft Fire Management Plan that dates to 1989. However, the 1989 draft FMP was never approved. Without an approved FMP, the park instead follows DO-18's guidance and uses full suppression of all wildland fires. Under Alternative 1, the No Action Alternative, DO-18's guidance would continue to be followed, as would be the earlier federal fire policy embodied in the 1989 draft plan. The 1989 draft listed three objectives for wildland fire management at the Lakeshore:

1. To protect all human life, property, historic and cultural sites, natural features and endangered species from wildfire.
2. To suppress wildfire in a safe, cost-effective, and environmentally sensitive way as possible.
3. To research the frequency and role of fire in conjunction with the natural processes of the park.

The intent of this alternative is two-fold: 1) it would suppress all wildland fires throughout the park, including both Manitou islands; and 2) it would not use prescribed fire anywhere in the park. In addition to suppressing all wildland fires and not using prescribed fire, Alternative 1 would also not allow for "wildland fire use for resource benefit." Wildland fire use (WFU) involves the management of fires ignited by natural means (usually lightning) that are permitted to burn under specific environmental conditions for natural resource benefits, such as improving wildlife habitat or perpetuating fire-dependant plant species. Rather, all naturally and human-ignited fires both on the mainland and the Manitou Islands would be declared unwanted wildland fires and be subjected to appropriate suppression actions.

There is a dual rationale for this complete-suppression policy: poor understanding of the natural role of fire in the local ecosystem and the extensive intermixing of private inholdings and use and occupancy permits within the park.

Under Alternative 1, one FMU would cover the entire park. The Lakeshore's Fire Management Goals would be as follows:

1. Preparedness and Suppression
 - a. Public and firefighter safety is the highest priority of every fire management activity.
 - b. Reduce the number of human-caused fires.
 - c. Suppress all human caused wildland fires to protect private property and park resources including archeological, historic, cultural landscapes, vegetative, wildlife, and infrastructure.
2. Hazard Fuels Management
 - a. Use appropriate methods of fuel management to reduce risk of fires in areas on

the boundary and around inholdings/life estates.

- b. Reduce the potential for large wildland fires which could adversely affect private property and unit resources.
- c. Use mechanical means to reduce fuels.

3. Vegetation Management

- a. Restore and maintain forest community to historic appearance using thinning as appropriate.

4. Public Use/Interpretation

- a. Protect the visiting public and provide services traditionally found on the unit.
- b. Increase public awareness of the role of fire in natural processes through interpretation.

Another key aspect of Alternative 1 is that the park would not utilize prescribed fire for either fuel management (hazard fuel reduction) or resource/habitat management purposes. Although the draft 1989 FMP does state that: “this fire management plan should be updated to include the possible use of prescribed natural fire (i.e. wildland fire use) where feasible and possibly the use of prescribed burns to maintain open fields...,” this plan was never approved and to date no prescribed fire program has been implemented to any extent. Moreover, policy prohibits the use of prescribed fire on units of the national park system without an approved FMP. Therefore, the No Action Alternative would continue the practice of not employing prescribed fire.

Alternative 1 (and each of the other alternatives) would also include:

- A Fire Reduction Program that includes fuels reduction at certain sites by means of mechanical thinning and protection of campground facilities by allowing campers to collect firewood from surrounding forests;
- Ignition prevention through a variety of means;
- A mobilization plan for fire suppression that includes fire qualifications, on-call procedures, provisions for communications, assigned firefighter responsibilities, maintenance of a fire cache with suitable equipment and supplies, provisions for use of aircraft for both reconnaissance and suppression, a step-up plan, and cooperative agreements with seven local fire departments (Cities of Frankfort, Homestead, Glen Arbor, and Empire; as well as Leland, Benzonia and Cedar townships) and MDNR;
- Identification of suppression responsibilities with regard to detection, dispatch plan, extended attack and safety;
- Measures to minimize or mitigate fire suppression impacts and rehabilitate affected sites;
- Recording and reporting procedures;

- Fire research and monitoring.

Under this alternative, and each of the others, the fire suppression component of the Wildland Fire Management Program would include preparedness efforts and annual training, an annual readiness inventory of the park's fire equipment caches, a pre-season risk analysis, pre-attack planning, initial attack planning, plans for extended attack and large fire suppression, and rehabilitation of firelines.

The No Action Alternative designates organizational responsibilities. It would also comply with current federal fire policy, and include programs in the following areas:

- Wildland Fire Suppression
- Fuels Management
- Fire Research
- Monitoring
- Public Safety
- Public Information and Education
- Protection of Sensitive Resources (e.g. natural & cultural resources, infrastructure, inholdings)
- Fire Critiques and Annual Plan Review

2.2 ALTERNATIVE 2 – SUPPRESS ALL WILDLAND FIRES BUT PERMIT PRESCRIBED FIRE

Like the No Action Alternative, Alternative 2 would suppress all lightning and human-ignited wildland fires. Similarly, one FMU would cover the entire park. However, in contrast to Alternative 1, Alternative 2 would actively employ prescribed fire for both hazard fuel reduction and natural and cultural resources management.

Alternative 2 would incorporate current national fire policy guidance. The National Fire Plan of 2000 embodied the philosophical changes in fire policy and outlined four major goals. These included:

- Improve Prevention and Suppression
- Reduce Hazardous Fuels
- Restore Fire Adapted Ecosystems
- Promote Community Assistance

The National Fire Plan placed emphasis on the use of prescribed fire, wildland fire use and mechanical thinning as tools that could be used to meet these goals. Congress also embraced this new fire policy direction through its appropriations to fund projects nationwide that would help meet the national fire plan. In particular, Congress emphasized the need to protect the wildland

urban interface by reducing hazardous fuel levels. A final difference under the new National Fire Plan involved administrative changes that allowed certain fire management activities of federal agencies to be funded from “emergency funds.”

Under Alternative 2, the Lakeshore’s Fire Management Goals would be as follows:

1. Preparedness and Suppression
 - a. Public and firefighter safety is the highest priority of every fire management activity.
 - b. Reduce the number of human-caused fires.
 - c. Suppress all human caused wildland fires to protect private property and park resources including archeological, historic, cultural landscapes, vegetative, wildlife, and infrastructure.
2. Hazard Fuels Management
 - a. Use appropriate methods of fuel management to reduce risk of fires in wildland-urban interface areas on the boundary and around inholdings/life estates.
 - b. Reduce the potential for large wildland fires which could adversely affect private property and unit resources.
 - c. Use mechanical means to reduce fuels in locations where fire use would adversely affect private property and unit resources.
 - d. Apply prescribed fire to maintain cultural landscapes and maintain reduced fuel loads.
3. Vegetation Management
 - a. Restore fire as an ecological disturbance process to appropriate vegetative communities.
 - b. Encourage growth of beneficial forest understory species.
 - c. Control exotic plant species.
 - d. Control or mitigate insect and disease attacks by providing a healthy diversity of forest age classes.
4. Public Use/Interpretation
 - a. Protect the visiting public and provide services traditionally found on the unit.
 - b. Increase public awareness of the role of fire in natural processes through interpretation.

Mechanical hazard fuel reduction would be used in close proximity to developed areas, and natural and cultural resources that are at risk from a high intensity fire. The intent of this program is to reduce the wildland fire hazard to levels that enable fire suppression forces to safely control fires with minimal loss of values.

Following mechanical fuel reduction around vulnerable developed and resource areas, prescribed fire would be the primary tool used to reduce hazard fuel loading in areas removed from

development. Where appropriate, prescribed fire would also be used to maintain safe levels of fuels near developed areas after the mechanical treatment.

Prescribed fire would be actively utilized on the mainland as well as both Manitou Islands. A prescribed fire is any fire ignited deliberately by park management to meet specific objectives. “Prescriptions” are measurable criteria that guide selection of appropriate management response and actions. Prescription criteria may include the meteorological conditions affecting the area under prescription, as well as factors related to the state of the area to be burned such as the fuel moisture content and other physical parameters. Other criteria that may be considered include safety, economic, public health, environmental, geographic, administrative, social or legal considerations, and ecological and land use objectives.

At the Lakeshore, prescribed fire would be used for hazard fuel reduction, ecosystem management, and open field/cultural landscapes management:

Hazard Fuel Reduction – Prescribed fire would be used to reduce fuel loads to protect park resources. Each prescribed fire plan would contain the following items:

- Measurable objectives
- Predetermined prescription
- Environmental compliance documentation
- Contingency actions
- Public information to neighbors and appropriate officials regarding objectives and timing of the planned burn

Ecosystem Management – Prescribed fire would be used to thin and maintain Lakeshore forests in a healthy condition.

Open Field/Cultural Landscapes Management – Prescribed fire would be used as one tool in the management of cultural landscapes. Fire can be used to maintain some of the open fields identified as part of the historic vista.

Alternative 2 designates organizational responsibilities, and like Alternative 1, it would comply with current federal fire policy, and include programs in the following areas:

- Wildland Fire Suppression
- Fuels Management
- Fire Research
- Monitoring
- Public Safety
- Public Information and Education
- Protection of Sensitive Resources (e.g. natural & cultural resources, infrastructure, inholdings)
- Fire Critiques and Annual Plan Review

2.3 ALTERNATIVE 3 – SUPPRESS ALL WILDLAND FIRES ON MAINLAND, ALLOW WFU ON MANITOU ISLANDS, PERMIT PRESCRIBED FIRE (*PREFERRED ALTERNATIVE*)

As in the case of Alternative 2, Alternative 3 would also incorporate current national fire policy guidance and the National Fire Plan of 2000. In Alternative 3, all wildland fires on the mainland would continue to be suppressed, as in Alternatives 1 and 2. However, on North and South Manitou Islands, wildland fire use would be permitted. Prescribed fire would be allowed and utilized on both the islands and the mainland.

Two FMUs would be designated at Sleeping Bear Dunes National Lakeshore – the Island Unit and the Mainland Unit. WFU would be permitted on the Island Unit but not the Mainland Unit.

Goals for the Lakeshore under Alternative 3 are identical to those shown under Alternative 2:

1. Preparedness and Suppression

- a. Public and firefighter safety is the highest priority of every fire management activity.
- b. Reduce the number of human-caused fires.
- c. Suppress all human caused wildland fires to protect private property and park resources including archeological, historic, cultural landscapes, vegetative, wildlife, and infrastructure.

2. Hazard Fuels Management

- a. Use appropriate methods of fuel management to reduce risk of fires in wildland-urban interface areas on the boundary and around inholdings/life estates.
- b. Reduce the potential for large wildland fires which could adversely affect private property and unit resources.
- c. Use mechanical means to reduce fuels in locations where fire use would adversely affect private property and unit resources.
- d. Apply prescribed fire to maintain cultural landscapes and maintain reduced fuel loads.

3. Vegetation Management

- a. Restore fire as an ecological disturbance process to appropriate vegetative communities.
- b. Encourage growth of beneficial forest understory species.
- c. Control exotic plant species.
- d. Control or mitigate insect and disease attacks by providing a healthy diversity of forest age classes.

4. Public Use/Interpretation

- a. Protect the visiting public and provide services traditionally found on the unit.

- b. Increase public awareness of the role of fire in natural processes through interpretation.

Mechanical hazard fuel reduction would be used in close proximity to developed areas, and natural and cultural resources that are at risk from a high intensity fire. The intent of this program is to reduce the wildland fire hazard to levels that enable fire suppression forces to safely control fires with minimal loss of values.

Following mechanical fuel reduction around vulnerable developed and resource areas, prescribed fire would be the primary tool used to reduce hazard fuel loading in areas removed from development. Where appropriate, prescribed fire would also be used to maintain safe levels of fuels near developed areas after the mechanical treatment.

Prescribed fire would be actively utilized on the mainland as well as both Manitou Islands. A prescribed fire is any fire ignited deliberately by park management to meet specific objectives. "Prescriptions" are measurable criteria that guide selection of appropriate management response and actions. Prescription criteria may include the meteorological conditions affecting the area under prescription, as well as factors related to the state of the area to be burned such as the fuel moisture content and other physical parameters. Other criteria that may be considered include safety, economic, public health, environmental, geographic, administrative, social or legal considerations, and ecological and land use objectives.

At the Lakeshore, prescribed fire would be used for hazard fuel reduction, ecosystem management, and open field/cultural landscapes management:

Hazard Fuel Reduction – Prescribed fire would be used to reduce fuel loads to protect park resources. Each prescribed fire plan would contain the following items:

- Measurable objectives
- Predetermined prescription
- Environmental compliance documentation
- Contingency actions
- Public information to neighbors and appropriate officials regarding objectives and timing of the planned burn

Ecosystem Management – Prescribed fire would be used to thin and maintain Lakeshore forests in a healthy condition.

Open Field/Cultural Landscapes Management – Prescribed fire would be used as one tool in the management of cultural landscapes. Fire can be used to maintain some of the open fields identified as part of the historic vista.

Alternative 3 designates organizational responsibilities, and like Alternatives 1 and 2, it would comply with current federal fire policy, and include programs in the following areas:

- Wildland Fire Suppression
- Fuels Management
- Fire Research
- Monitoring
- Public Safety
- Public Information and Education
- Protection of Sensitive Resources (e.g. natural & cultural resources, infrastructure, inholdings)
- Fire Critiques and Annual Plan Review

Fire Management Units

Unit I – Island FMU

This alternative would include two FMUs. The first is the Island FMU. This unit includes the areas designated to be managed as wilderness on North and South Manitou Islands. Areas on the islands that would not be managed as part of this unit include the village areas and established campgrounds. Identified cultural landscape areas may be treated with prescribed fire but will not be included in WFU fire perimeters. These landscapes and appropriate treatment will be identified through consultation with an Interdisciplinary Team that will include a historic landscape architect as well as fire management staff. Fuel reduction activities may also be undertaken to protect cultural resources from both wildland and prescribed fire, in consultation with the Park Cultural Resource Specialist.

The Island FMU contains approximately 20,000 acres (8,000 hectares) with 5,000 acres (2,000 hectares) located on South Manitou and 15,000 acres (6,000 hectares) on North Manitou. Both islands are topographically similar with the high points being about 400 feet (120 m.) above Lake Michigan. The terrain is mostly gently rolling except for some steep dune areas on the west side of both islands.

Among the management constraints for both Unit I and Unit II are the following:

- Maintain Class II air quality standard.
- Use Minimum Impact Suppression Techniques (MIST) to reduce suppression damages.
- Bulldozers and other tracked vehicles will not be used.
- Retardant and foam will not be used in wetland areas; retardant will generally be avoided throughout the park.

This unit would allow for wildland fire use. The primary objective of the Wildland Fire Use program would be to allow restoration of naturally-ignited fire as an ecological process and natural disturbance agent on North and South Manitou Islands without unduly reducing visitation or visitor enjoyment. Fire would be used to reduce the density of vegetation, restore age-class and vegetation type mosaics and reduce flammability.

Within Unit I, lightning fires that are allowed to burn unimpeded by suppression efforts would be continually monitored and evaluated from the time of discovery until they are declared out to ensure that they remain within prescription. Lightning ignitions that do not satisfy these prescription criteria and ongoing wildland fire use fires that exceed prescription would be reclassified as wildfires and an appropriate management response will be taken according to a Wildland Fire Situation Analysis (WFSA). A variety of holding actions are appropriate to keep a fire managed for resource benefits within planned boundaries. The level of holding activity that would be acceptable before a fire is declared an unwanted wildland fire would be determined on a case-by-case basis.

Each WFU fire burning on the islands would be revalidated each day that it is actively spreading (and periodically when it is not) by formally assessing any changes in the status of the threats and constraints identified in the Decision Criteria shown in the FMP. As long as they remain within prescription, some fires may be allowed to burn for several months or longer without direct control or until extinguished by rain or snow. It is important for the public to understand that such fires are not being allowed to burn indiscriminately, but rather are being managed under strict predetermined criteria.

Unit II – Mainland FMU

The Mainland FMU includes the mainland portion of the Lakeshore; it extends along 34 miles (55 km) of Lake Michigan shoreline. Unit II consists of four distinct sub-units. Along the lake from south to north are the Platte River Unit, Sleeping Bear Unit, and Good Harbor Unit. Lying inland is the Bow Lakes Unit. This FMU is a full-suppression unit with regards to all wildland ignitions. Prescribed fire is acceptable and expected to be used to support management needs. There are numerous inholdings and adjacent properties that create a significant Wildland Urban Interface (WUI) problem. Political boundaries are numerous due to the linear nature of the lakeshore. The boundary between Leelanau and Benzie counties is located just south of the town of Empire. Access for equipment is available on roads and trails found throughout the unit. In most cases any point in the Mainland FMU is less than ½ mile (0.8 km) from road or trail access.

The Lakeshore proposes a number of Wildland Urban Interface Initiative (WUII) projects in Unit II under this alternative that would reduce fire hazards in the vicinity of developed areas on the mainland in the vicinity of the community of Glen Arbor, including the following:

- Trailhead: This proposed treatment (and two possible alternates) would reduce fuel loading and fire intensity on approximately three acres of primarily jack pine in the vicinity of the Dunes Trailhead and road by thinning brush and limbing trees on both sides. The fuel break would be 15-20 feet wide, with trees cut flush to the ground. Work would be completed by hand crews, and the boundary maintained indefinitely as a fuel break.
- Day Street: The proposed treatment area (or a possible alternative) would thin brush and limb trees on approximately two acres following Day Street from M109 North until it ends, and from the terminus of Day Street along the established footpath to Lake

Michigan. Hand crews would conduct the work, which would necessitate no stump grinding or ground disturbance; the cleared zone would be maintained indefinitely as a 15-20 foot wide fuel break. The fuel type is mixed hardwoods and costal forest containing jack pines.

- Church: This project (or a possible alternative) is intended to reduce the risk of fire spreading from the Lakeshore to adjacent, non-federal land by creating a fire break and providing a defensible area to fight fire. In a 15-20ft. wide shaded fuel break covering approximately 3.6 acres, trees and shrubs less than five inches in diameter would be cut flush to the ground and bigger trees would be limbed. The fuel break would be maintained as such indefinitely. The fuel type is primarily pines and mixed hardwoods.
- Forest Haven (Alternate): The proposed treatment area would encompass approximately 0.7 acre. It would follow the park boundary from M-22 to the boundary marker A-22, following an old road, and from boundary markers A-22 to A-20 a shaded, 15-20 ft. wide fuel break would be put in and maintained indefinitely. Work would be completed by hand crews. The old road would be minimally thinned, and large fuels removed. Trees and shrubs less than five inches in diameter at breast height would be cut flush to ground and dispersed. Some bigger trees would be limbed. There would be no stump grinding or ground disturbance. The fuels are primarily mixed hardwoods and pines.
- Phone Company: A fuel break would be established on approximately six acres (or a possible alternative) following the park boundary from markers A-44 to A-57, along an old road from boundary markers A-57 to A-63 and from boundary markers A-63 to A-72. The fuel break would be maintained indefinitely. Trees and shrubs less than five inches in diameter at breast height would be cut flush to ground and dispersed and large fuels removed. Some bigger trees would be limbed. There would be no stump grinding or ground disturbance. Leaf blowing would follow to clear the break. The fuels are primarily mixed hardwoods.
- Homestead: This proposed project (or one of two alternatives) is approximately nine acres in size and located along the Lakeshore boundary. This area would be selectively thinned to reduce fuel loading and fire intensity, as well as provide better access for fire fighting along the park boundary and the Homestead Resort. The treatment area would start at boundary marker B-213, adjacent to the Homestead Maintenance shop, and follow the park boundary to B-228. The project would construct a 15-20 foot shaded fuel break. Trees and shrubs less than five inches in diameter at breast height would be cut flush to ground and dispersed East of treatment area. Larger trees may be limbed if necessary. Leaf blowing would follow to clear the break. There would be no stump grinding or ground disturbance. Work would be completed by hand crews, and the boundary maintained indefinitely as a fuel break. Fuels are pine plantations and hardwoods.

2.4 ENVIRONMENTALLY PREFERRED ALTERNATIVE

The National Park Service is required to identify the environmentally preferred alternative(s) for any of its proposed projects. That alternative is the alternative that would promote the national environmental policy expressed in NEPA (Section 101 (b)). This includes alternatives that:

- 1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- 2) ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- 3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- 4) preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- 5) achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
- 6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) that “causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (DOI, 2001a).

In this case, the Preferred Alternative (#3 – Suppress All Wildland Fires on Mainland, Allow Wildland Fire Use on Islands, Permit Prescribed Fire) is the environmentally preferred alternative for the new and revised Fire Management Plan for Sleeping Bear Dunes National Lakeshore, since it comes the closest to meeting goals 1, 2, 3, 4 and 6 above. Under this alternative, a combination of 1) wildland fire use for resource benefit only on North and South Manitou Islands, 2) prescribed fires for habitat management and hazard fuel reduction throughout the park, as well as 3) fire suppression, would all be used to protect human life and property, reduce hazardous fuel loadings in the park, improve wildlife habitat, protect historic structures, and reduce the risk to adjacent properties and inholdings from the threat of wildfires originating inside the park. Of the three alternatives, Alternative 3 is most likely to maximize the benefits and minimize the risks associated with fire at the Lakeshore. While this alternative certainly would not eliminate all risk of damage and destruction from unwanted wildland fires in the park, of the three, it would best safeguard the historic, cultural, and natural resources of the Lakeshore for current and future generations.

2.5 ALTERNATIVES CONSIDERED BUT NOT ANALYZED FURTHER IN THIS EA

2.5.1 Emphasize Wildland Fire Use and Exclude Prescribed Fire Throughout the Park

Wildland Fire Use involves the management of wildland fires ignited by natural means (usually lightning) that are permitted to burn under specific environmental conditions for natural resource benefits. This alternative would establish one FMU at Sleeping Bear Dunes National Lakeshore that encompasses the entire park – both the islands and the mainland – and depend on WFU throughout the park instead of prescribed burns or mechanical treatments as the primary means of controlling hazard fuels and achieving vegetation and resource objectives.

This alternative was considered but not analyzed further in this EA because of its inherent risks and impracticability at Sleeping Bear Dunes National Lakeshore. The narrow configuration of the mainland portion of the park – long, winding along the Lake Michigan lakeshore, and with long boundaries abutting private lands – is such that wildland fire containment within park boundaries and away from structures and developments requiring protection could not be guaranteed. Moreover, since only a small fraction of the park's wildland fires result from natural ignition, the opportunities for WFU at the Lakeshore are rather limited. Due to the lack of prescribed fire under this alternative, there is a strong likelihood that it would allow for hazardous fuel accumulation over a period of years.

In conclusion, park staff determined that the potential risks to human health and safety, cultural resources, and improved property under this alternative, as well as the likely inability to meet vegetation management objectives, outweigh any possible resource benefits that would be obtained from emphasizing wildland fire use and excluding prescribed fires at Sleeping Bear Dunes National Lakeshore.

2.5.2 Permit Both Wildland Fire Use and Prescribed Fire Throughout the Park

This alternative was considered, and rejected, for the same reasons as the previous one. It is not practicable to allow wildland fire use on the mainland portion of the Lakeshore due to its relatively narrow configuration in most places and the presence of numerous inholdings and private developments in close proximity to the park.

2.6 MITIGATION MEASURES COMMON TO EACH ALTERNATIVE

A number of mitigation measures are common to each alternative, except where otherwise noted. Prescribed fire monitoring measures are described first, followed by a list of mitigation measures by resource area (impact topic). Please see the glossary in Appendix B for definitions of terms.

Prescribed Fire Monitoring

Prescribed fire would be conducted under Alternatives 2 and 3. All prescribed burns will be monitored to observe the fire, assess its potential, and provide a historic context; fire effects monitoring determines whether prescribed fire objectives are met and if unwanted effects are occurring. Information gathered during fire monitoring is needed to: keep fires within predetermined criteria, know when to take suppression action, protect human life and/or property, and increase our knowledge of fire effects on the park ecosystem. Monitoring will include documenting the fire environment (weather, fuels, topography), fire behavior (manner and rate of spread, flame length, etc.), and fire effects (percent of fuels consumed, changes in plant and animal community composition and structure, etc.). Photographs will be taken. Weather readings will be made periodically with a belt weather kit at the fire site. Forms for recording data will be supplied to monitors.

Soils

Minimum Impact Suppression Tactics (MIST) will be used in all fire suppression activity. MIST relevant to protecting soils include the following:

- Cold trail the fire-edge when practical (a method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire, digging out every live spot, and trenching any live edge).
- Wetlines, or environmental lines, will be used wherever possible in lieu of handline construction if water and pumps are available. Waterbars will be constructed on handlines on steep slopes.
- Utilize soaker hose or foggers in mop-up. Avoid "boring" and hydraulic action on shallow soils. Boring is the use of a straight stream nozzle under high pressure during mop up phases of a fire to basically dig and mix up the hot coals along with the soil; in shallow soils this can literally wash the soil right off the bedrock.
- Firelines will be kept to the minimum width necessary to allow backfiring or safe blackline to be created. Utilize natural barriers wherever possible to avoid "tunnel effect" (the unnatural, unsightly appearance of a tunnel because of cleared undergrowth and vegetation along a relatively straight line).
- Bulldozers, graders and other large earth-moving equipment will not be used except when authorized by the park superintendent in emergency situations.

Water Resources

The following special restrictions apply to aerially-applied retardant and different types of foam suppressant use:

Retardant – No retardant drops within 400 feet (120 m) of open water.

Foam (aerial delivery) – Aerial delivery of foam requires Park Superintendent approval on a case-by-case basis. When approved, the following guidelines apply:

- Foam concentrate will only be injected into the holding tank after the water pick-up operation has been completed.
- Drops from Beaver, T2 and T3 helicopters – no drops within 200 feet (60 m) of open water.
- Drops from Scoopers, heavy air tanker or heavy helicopter – no drops within 400 feet (120 m) of open water.

Foam (ground delivery with motorized pumps):

- No application within 25 feet (8 m) of open water when using small pumps.
- No application within 50 feet (15) of open water when using Mk III or equivalent pumps.
- All foam concentrate used for injection will be located in impermeable containment basins, e.g. visqueen (plastic sheet) spread over rocks or logs to form a catch basin.

Foam (ground delivery with backpack pumps):

- No application within 10 feet (3 m) of open water.
- All backpack pumps will be filled a minimum of 10 feet (3 m) from open water. A separate, uncontaminated container must be used to transport water from source to backpack pump. This container must be kept uncontaminated by concentrate.

Air Quality

- (1) Prescribed fires and WFUs (Alts. 2 and 3 only) – Fires to improve resource values will have a smoke dispersion component in the prescription. If smoke creates a prolonged hazard or significant nuisance, appropriate actions will be taken to mitigate the condition causing the problem or the fire will be suppressed.
 - (2) Suppression – Suppress or mop up smoldering fuels when they are likely to generate smoke management "problems."
 - (3) Ignition – Ignite smoldering fuels to get them to burn with an active flame, which generates less than half the emissions of smoldering combustion. Flaming combustion also generates convection columns, which raise smoke above ground level.
 - (4) Types of Fires – Use backing fires when possible.
 - (5) Dispersion – Recognize poor dispersion conditions that will last several days, such as the predicted passage of a slow-moving warm front, a lingering high pressure system with stable atmosphere, or high humidity conditions, and adjust burning strategies as necessary.
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- (6) Residual Smoke – If a fire has burned for an extended period of time and generated a lot of residual smoke, the NPS will consider suppressing all new starts to minimize additional smoke production.
- (7) Firefighter Safety – During high smoke production phases of a fire suppression operation, crews will be rotated out of high smoke areas.
- (8) Sensitive Areas – Prescribed fire ignitions (Alts. 2 and 3 only) in sensitive areas will be done when visitation is low, or the Superintendent may restrict entry to areas potentially impacted by smoke.

Guidelines for smoke and air quality management – The following are the management guidelines for all phases of the fire management program:

- No prescribed fires will be ignited during air pollution alerts, temperatures inversions or when a burn ban has been established by any local government.
- Fire weather forecasts will be used to predict smoke dispersal.
- Burning will be done only when conditions result in rapid smoke dispersal.
- Proper firing techniques to lower smoke production will be utilized.
- Timing of prescribed fires will occur after 9:00 am with ignition ending before 4:00 pm.
- Smoke projection maps will be prepared to assist in projecting smoke dispersal patterns.
- Local police and fire agencies will be notified of any prescribed fire so they may provide any needed assistance with traffic flow should problems with smoke dispersal occur.
- Prescribed fires will be planned and conducted when proper wind flow will disperse smoke over unpopulated or low density populated areas.
- Federal Clean Air Act standards will not be violated by any prescribed fires.

Threatened and Endangered Species

- All bald eagle nests, sensitive plant locations, or any other listed species known to be present, which fall within or in close proximity to prescribed burn units, will receive mitigation in prescribed fire burn plans to ensure they are not impacted.
- Mechanical fuel treatments should not take place during active eagle nesting periods, and all hazard fuel reduction methods will not be any closer than 660 feet to an active eagle nest. In addition, prescribed or WFU fire will be excluded from these areas.
- Any fire that is judged to threaten an active bald eagle's nest would be managed to minimize risk.
- NPS will extinguish any wildland fires or wildland fire use on North and South Manitou Island that might threaten any piping plover nests.

- Prescribed fires for ecosystem management and hazard fuel reduction will not be ignited within any area known to harbor Pitcher's thistle and Michigan monkey flower.
- Fire management staff will provide Chief of Natural Resources with prescribed burn plans far enough in advance to allow survey of the area.
- Fire management staff will inform Chief of Natural Resources of unwanted wildland fire's suppression activities as soon as possible.

Wilderness

- Minimum Impact Suppression Tactics (MIST) will be used in all fire suppression activity within recommended wilderness areas.

Cultural Resources

- Fire management staff will provide the park Cultural Resource Specialist with prescribed burn plans with sufficient lead time and information to conduct archeological investigation, identify potential landscape features and consult with Indian tribes. The Park Cultural Resource Specialist will assist in planning for prescribed fire activities. The lead time suggested here should be used primarily to plan for protection and avoidance of known archeological sites, as determined appropriate in consultation with NPS and SHPO staff and other consultants.
- Fire management staff will inform park Cultural Resource Specialist of unwanted wildland fires and suppression activities as soon as possible.
- Park Cultural Resource Specialist will provide fire management staff with information about known cultural resources in prescribed fire units and recommend protective measures. All cultural resources located in or near prescribed fire units will be protected to the extent possible.
- Park Cultural Resource Specialist will consult with and seek advice from other cultural resource specialists as appropriate if cultural resources are threatened or destroyed during unwanted wildland fires.
- The public will be notified of all upcoming prescribed fires and all unwanted wildland fires in progress that could threaten park cultural resources.

Land Use

- Cooperate with adjacent property owners, especially those with improved property containing structures and residences, to use mechanical thinning or other non-fire

treatments to reduce hazardous fuels within the wildland-urban interface so as to create a defensible space around vulnerable structures.

- Notify adjacent property owners and residents of upcoming prescribed fires by means of newspaper articles, public service announcements on local broadcast media, letters and/or other means.

Public Safety

- The general public will be made aware of wildland fires and prescribed burns through press releases and general interpretive presentations.
- Access to areas affected by fire will be restricted until hazards to the general public have been mitigated.
- Safety briefings will be conducted for NPS personnel prior to any participation in wildland fire operations or prescribed burns.
- Appropriate regulatory and/or enforcement agencies will be notified prior to any prescribed burns to assist in safely managing pedestrian, equestrian or vehicular traffic. Warning signs will be posted along roads and trails as necessary.
- All fire personnel will be reminded of the "18 Situations That Shout Watch Out" and will be expected to comply with the "10 Standard Fire Orders".

Visitor Use and Experience

Many of the above measures (especially related to smoke and safety) will mitigate the impacts of the fire management program on visitor use and experience. In addition, the Lakeshore will undertake an information and education program. The following guidelines will be followed:

- Timely and accurate information will be provided to the media and lakeshore visitors regarding the status of fire actions and suppression efforts.
- Informational handouts explaining the fire management program will be prepared and updated as necessary. During periods when prescribed or wildland fire use fires are burning, these handouts will be distributed to both visitors and local residents.
- The prescribed burn program will be discussed in informal contacts with all unit personnel, neighbors and visitors.
- Adjacent landowners will be notified when fire, particularly wildland fire, is a threat to off-unit residential areas, inholdings and life lease properties.

- When the staffing class is at SC-IV or SC-V (during times of heightened fire danger), information will be prominently displayed at visitor contact points. Patrol activity on both mainland and islands units may be increased to detect potential fires and to monitor visitor activity. At SC-V it may become necessary to close portions of the park to protect the public.

2.7 COMPARISON OF ALTERNATIVES

Table 1 on the next page compares the potential environmental impacts resulting from the Proposed Action and the No Action alternatives. Potential impacts are grouped according to environmental resource area or component. Section 4.0, Environmental Consequences, of this EA contains a detailed discussion of these potential impacts by resource area.

Table 1 – Impact Comparison Between FMP Alternatives at Sleeping Bear Dunes National Lakeshore*

Environmental Resource/ Component	Alternative 1 – No Action / Suppress All Wildland Fires and Exclude Prescribed Fire	Alternative 2 – Full Suppression with Prescribed Fire	Alternative 3 – Full Suppression on Mainland, WFU on Islands, Permit Prescribed Fire (<i>Preferred Alternative</i>)
Geology and Soils	<ul style="list-style-type: none"> Negligible impacts on geology Long-term, localized to regional, negligible to moderate impacts on soils 	<ul style="list-style-type: none"> Negligible impacts on geology Long-term, localized, minor impacts on soils 	<ul style="list-style-type: none"> Negligible impacts on geology Long-term, localized, negligible to minor impacts on soils
Water Resources	<ul style="list-style-type: none"> Long-term, localized to regional, and minor Short-term, localized to regional, and moderate (infrequently) 	<ul style="list-style-type: none"> Long-term, localized and negligible to minor 	<ul style="list-style-type: none"> Long-term, localized and negligible to minor
Floodplains and Wetlands	<ul style="list-style-type: none"> Long-term, localized negligible to minor impacts on floodplains Long-term, localized negligible to minor impacts on wetlands 	<ul style="list-style-type: none"> Long-term, localized negligible to minor impacts on floodplains Long-term, localized negligible to minor impacts on wetlands 	<ul style="list-style-type: none"> Long-term, localized negligible to minor impacts on floodplains Long-term, localized negligible to minor impacts on wetlands
Air Quality	<ul style="list-style-type: none"> Temporary, regional and minor adverse impacts on air quality (most years) Temporary, moderate impacts on regional air quality (infrequently) 	<ul style="list-style-type: none"> Temporary, localized and negligible to minor (from any one wildland fire) Long-term, localized to regional, and minor 	<ul style="list-style-type: none"> Temporary, localized and negligible to minor (from any one wildland fire) Long-term, localized to regional, and minor
Vegetation	<ul style="list-style-type: none"> Long-term, regional, and minor adverse 	<ul style="list-style-type: none"> Long-term, regional, and minor to moderately beneficial 	<ul style="list-style-type: none"> Long-term, regional, and minor and moderately beneficial
Wildlife and Fisheries	<ul style="list-style-type: none"> Long-term, regional, and minor adverse impacts on wildlife Negligible on fisheries 	<ul style="list-style-type: none"> Long-term, regional, and minor beneficial impacts on wildlife Negligible on fisheries 	<ul style="list-style-type: none"> Long-term, regional and moderately beneficial impacts on wildlife Negligible on fisheries
Threatened & Endangered Species	<ul style="list-style-type: none"> Negligible adverse impacts on federal -listed species Minor impacts on state-listed species 	<ul style="list-style-type: none"> Negligible adverse impacts on federal -listed species Overall benefits to state-listed species 	<ul style="list-style-type: none"> Negligible adverse impacts on federal -listed species Overall benefits to state-listed species

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Wilderness	<ul style="list-style-type: none"> Long-term, minor adverse impacts on recommended wilderness 	<ul style="list-style-type: none"> Long-term, negligible to minor adverse impacts on recommended wilderness 	<ul style="list-style-type: none"> Temporary, minor adverse impacts Long-term, minor beneficial impacts
Noise	<ul style="list-style-type: none"> Temporary, localized, negligible to minor 	<ul style="list-style-type: none"> Temporary, localized, negligible to minor 	<ul style="list-style-type: none"> Temporary, localized, negligible to minor
Cultural Resources	<ul style="list-style-type: none"> Long-term, regional, and minor to moderate impacts 	<ul style="list-style-type: none"> Long-term, regional, and negligible to minor impacts Benefits to historic and archeological resources by providing more protection from unwanted wildland fires 	<ul style="list-style-type: none"> Long-term, regional, and negligible to minor impacts Benefits to historic and archeological resources by providing more protection from unwanted wildland fires
Land Use	<ul style="list-style-type: none"> Temporary, localized, and negligible adverse effects in most years Higher risk of long-term, localized to regional, moderate to major adverse effects on adjacent private property and structures 	<ul style="list-style-type: none"> Temporary, local, and negligible to minor adverse effects in most years Long-term benefit of reducing risk of catastrophic wildfires Small but non-zero risk of escaped prescribed fire resulting in localized property and structural damage 	<ul style="list-style-type: none"> Temporary, local, and negligible to minor adverse effects in most years Long-term benefit of reducing risk of catastrophic wildfires Small but non-zero risk of escaped prescribed fire resulting in localized property and structural damage
Health and Human Safety	<ul style="list-style-type: none"> Temporary, local and negligible adverse effects (most years) Some beneficial effects Moderate to major adverse impacts (infrequently) 	<ul style="list-style-type: none"> Temporary, localized, and negligible to minor adverse effects overall Some beneficial effects Relatively small risk of escaped fires but avoids larger risk of severe ones 	<ul style="list-style-type: none"> Temporary, localized, and negligible to minor adverse effects overall Some beneficial effects Relatively small risk of escaped fires but avoids larger risk of severe ones
Public Services	<ul style="list-style-type: none"> Temporary, local and negligible adverse effects (most years) Moderate to major adverse (infrequently) 	<ul style="list-style-type: none"> Temporary, local and minor (most years) adverse Avoids long-term higher risk of severe wildfires and their impacts on public services 	<ul style="list-style-type: none"> Temporary, local and minor (most years) adverse Avoids long-term higher risk of severe wildfires and their impacts on public services

Table 1 – Impact Comparison Between FMP Alternatives at Sleeping Bear Dunes National Lakeshore*

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Park Facilities and Operations/ Visitor Use and Experience	<ul style="list-style-type: none"> • Short-term, localized and negligible adverse effects on park facilities • Short-term, localized and negligible to minor adverse effects on operations • Long-term, regional, and minor adverse effects on visitor use and experience • Rare catastrophic wildfires would have temporary or short-term moderate to major adverse effects on facilities, operations and visitor experience 	<ul style="list-style-type: none"> • Short-term, localized and negligible to minor adverse effects on park facilities • Short-term, localized and negligible to minor adverse effects on park operations • Temporary to short-term, localized to regional, and negligible to minor adverse effects on visitor use and experience • Long-term, localized to regional, and minor to moderate beneficial effects on visitor use and experience • Reduces the risk of moderate to major impacts on facilities, operations and visitor use and experience during infrequent, extreme fire years that Alternative 1 would result in 	<ul style="list-style-type: none"> • Short-term, localized and negligible to minor adverse effects on park facilities • Short-term, localized and negligible to minor adverse effects on park operations • Temporary to short-term, localized to regional, and negligible to minor adverse effects on visitor use and experience • Short-term, localized to regional, and minor to moderate beneficial effects on visitor use and experience • Reduces the risk of moderate to major impacts on facilities, operations and visitor use and experience during infrequent, extreme fire years that Alternative 1 would result in

* See Section 4.1 for definitions of terms used in this table.